

Answer

Incarcerated Inguinal Hernia

The computed tomographic scan findings were consistent with an incarcerated right inguinal hernia with acute appendicitis in the hernia sac. A laparoscopic appendectomy was performed, an inflamed internal ring was found, and a temporary repair was performed by dissecting and suturing a portion of the adjacent lateral vesicocumbilical ligament to the internal inguinal ring (**Figure 3**).

A 1-cm T1a appendiceal carcinoid tumor was found. The patient returned to the operating room 6 weeks later for exploratory laparoscopy; no additional evidence of malignancy was found, and the primary hernia repair was adequate. He underwent a formal transabdominal preperitoneal repair with mesh, and his recuperation was uneventful.

An inguinal hernia is termed an *Amyand hernia* if the hernia sac comprises or contains the appendix. To our knowledge, the presence of an appendiceal carcinoid tumor presenting as a case of incarcerated Amyand hernia has not been reported in the literature. We report the first case of this unusual presentation.

Amyand hernia has frequently been reported in younger (>2 years) and older (>60 years) individuals.^{1,2} A preoperative diagnosis is rare; more often, the diagnosis is made during surgery.³ Amyand hernia may mimic entirely different disease processes; therefore, a high index of suspicion is warranted. In the literature, the clinical presentations vary greatly: from the most common right-sided hernia,^{2,4,5} to a left-sided hernia,⁶ an incarcerated inguinal hernia, testicular torsion,^{7,8} to the extremes of necrotizing fasciitis and shock.^{9,10} The contents of a hernia can be a normal-appearing, an inflamed, or a perforated appendix. Malignancy is extremely rare, with only 2 case reports of adenocarcinoma of the appendix.^{11,12} To the best of our knowledge, this is the first case of the presence of an appendiceal carcinoid tumor in an Amyand hernia. Appendiceal carcinoids comprise 1% of



Figure 3. Temporary repair of hernia.

all appendectomy specimens, and the size, extension, histology, and mitotic activity of the tumor are useful predictors of malignancy.

The diagnosis of Amyand hernia is usually obtained intraoperatively. However, the diagnosis has been achieved preoperatively using ultrasonography¹³ and computed tomography.^{14,15} In this case, a radiographic diagnosis was made preoperatively with a computed tomographic scan and was confirmed during surgery.

The management of an Amyand hernia varies depending on the presence or absence of appendiceal inflammation; if, during an exploration, the appendix appears benign, some have advocated against an appendectomy.¹⁶ However, if the patient is in the operating room and the diagnosis has been made, it is prudent to remove the appendix, regardless of its gross appearance, the possibility of misdiagnosis, or the possibility of it not being malignant. The timing and approach (open or laparoscopic) of the repair,¹⁷ with or without placement of mesh,¹⁸ are common subjects of debate.

We believe that the decision should be made on a case-by-case basis. A total extraperitoneal repair has also been reported.¹⁹ This approach carries the disadvantage of not visualizing the appendix directly and, thus, the subsequent inability to address a pathologic appendix.

In our case, we selected a laparoscopic transabdominal preperitoneal approach, for both the appendectomy and the primary hernia repair; this approach allowed us to minimize tissue trauma by avoiding the conventional McBurney incision and its possible subsequent morbidity. In addition, the laparoscopic approach allowed us to reexplore the area with minimal adhesion formation and adequate visualization of the entire abdominal cavity.

The choice of using the adjacent vesicocumbilical ligament as an autologous biomaterial for the temporary repair was an inexpensive and innovative solution that, in the presence of contamination, proved to be an adequate solution. We believe that it is sometimes warranted to defer the definitive repair of the hernia, and, in this case, deferring the definitive repair proved useful by providing the patient with adequate time to decrease the bacterial load at the hernia site while allowing for the final pathology report to arrive and thus help us formulate a reoperative strategy that included a complete laparoscopic exploration in addition to the formal repair of the inguinal hernia in a noncontaminated area.

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